

DYNAMIC GAIN CONTROL IN A DIGITAL

*Correction*

EDDY CURRENT SIGNAL PROCESSOR

This is a divisional application of that application filed October 8, 2002 under serial number 10/266,845, *which is still pending*

BACKGROUND

FIELD OF TECHNOLOGY

This invention relates to eddy current signal processing, and more particularly to digital extraction of an eddy current signal employing dynamic signal amplification and phase compensation.

PRIOR ART

When an eddy current probe is in the vicinity of a flaw in a material, such as a hole or a crack, the flaw will modulate a carrier signal introduced into the material from an alternating current in a coil in the eddy current probe.

It is known to extract the signal through digital signal processing. Generally, a digital oscillator generates a digital carrier signal and corresponding sine and cosine waves. The carrier is then converted to an analog signal, low-pass filtered, and then directed to a probe coil that generates an electromagnetic field that penetrates into a nearby material. An eddy current is generated in the material, which generates its own electromagnetic field that is detected by the probe coil. When the material is without flaws, the two electromagnetic fields are largely out of phase and the fields partially cancel. However, when a flaw exists in the material, the amplitude and phase of the second field are modified and a small detectable signal results, modulated on the return carrier signal. A programmable return signal amplifier optimizes the input range of the